

GLENN JOHNSON, PhD, Volume I, 2-24-09

1

1 IN THE UNITED STATES DISTRICT COURT FOR THE
2 NORTHERN DISTRICT OF OKLAHOMA
3
4

5 W. A. DREW EDMONDSON, in his)
6 capacity as ATTORNEY GENERAL)
7 OF THE STATE OF OKLAHOMA and)
8 OKLAHOMA SECRETARY OF THE)
9 ENVIRONMENT C. MILES TOLBERT,)
10 in his capacity as the)
11 TRUSTEE FOR NATURAL RESOURCES)
12 FOR THE STATE OF OKLAHOMA,)

13 Plaintiff,)
14)

15 vs.)

4:05-CV-00329-TCK-SAJ

16 TYSON FOODS, INC., et al,)
17)

18 Defendants.)
19)

20 - - - - -
21 VOLUME I OF THE VIDEOTAPED
22 DEPOSITION OF GLENN JOHNSON, PhD, produced as a
23 witness on behalf of the Plaintiff in the above
24 styled and numbered cause, taken on the 24th day of
25 February, 2009, in the City of Tulsa, County of
Tulsa, State of Oklahoma, before me, Lisa A.
Steinmeyer, a Certified Shorthand Reporter, duly
certified under and by virtue of the laws of the
State of Oklahoma.

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918-587-2878

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A P P E A R A N C E S

1
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25 ALSO PRESENT: Dr. Roger Olsen

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1 wastewater treatment plant sample; is that the one
2 that's left out?

3 Q There's three on the report here. Lincoln was
4 a stream one also, was it not, Dr. Johnson?

5 A Yes, but -- 03:22PM

6 Q These are the pure wastewater treatment plant
7 effluents.

8 MR. GEORGE: Object to form.

9 Q Do you see three separate groups of patterns
10 on this report as you circled? 03:23PM

11 A I've drawn three circles here.

12 Q Do they overlap?

13 A No.

14 Q Okay. So is it fair to say there's three
15 separate groupings on this Exhibit 7? 03:23PM

16 MR. GEORGE: Object to form.

17 A Within the three context of the three groups
18 you asked me to circle, there's no overlap between
19 those three. There's plenty of overlap between --
20 with the other samples. 03:23PM

21 Q Well, the samples that are in the middle,
22 would they not be characterized as mixtures between
23 these three --

24 MR. GEORGE: Object to form.

25 Q -- groups that you've circled? 03:23PM

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1 IN THE UNITED STATES DISTRICT COURT FOR THE
2 NORTHERN DISTRICT OF OKLAHOMA
3
4

5 W. A. DREW EDMONDSON, in his)
6 capacity as ATTORNEY GENERAL)
7 OF THE STATE OF OKLAHOMA and)
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9 ENVIRONMENT C. MILES TOLBERT,))
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1 (Whereupon, the deposition began at
2 8:32 a.m.)

3 VIDEOGRAPHER: We are back on the Record.
4 This is Volume II in the deposition of Dr. Glenn
5 Johnson. It is Wednesday. The date is February 08:34AM
6 25th. The year is 2009. And would counsel present
7 please identify themselves for the Record, please?

8 MR. PAGE: David Page representing the
9 State of Oklahoma, and with me is Dr. Olsen.

10 MR. GEORGE: Robert George representing the 08:34AM
11 Tyson defendants.

12 MR. LEWIS: Kerry Lewis on behalf of the
13 Cargill defendants.

14 MR. GRAVES: James Graves representing
15 George's, Inc., and George's Farms, Inc. 08:34AM

16 GLENN JOHNSON, PhD
17 having first been duly sworn to testify the truth,
18 the whole truth and nothing but the truth, testified
19 as follows:

20 CONTINUED DIRECT EXAMINATION

21 BY MR. PAGE:

22 Q Good morning, Dr. Johnson.

23 A Good morning.

24 Q Do you realize you are still under oath this
25 morning? 08:34AM

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1 correct?

2 **A** That's correct.

3 **Q** And that is because you reviewed some poultry
4 house density, at least partly because you reviewed
5 some poultry house density information, and you
6 found that it did not comport with Dr. Olsen's
7 classification under PC1; correct?

08:47AM

8 **A** Yes. Many of the samples were not consistent
9 with his interpretation.

10 **Q** And you provided some information in your
11 report -- some examples of that in your report;
12 correct?

08:47AM

13 **A** Yes, I did.

14 **Q** Okay. Now, I think yesterday you said you got
15 a poultry house map of density from a group called
16 what?

08:47AM

17 **A** DPRA.

18 **Q** Is there anyone from DPRA that is providing an
19 expert report in this case that you're aware of?

20 **A** Not that I know of.

08:48AM

21 **Q** Okay, and did you do any independent
22 evaluation to determine whether the information they
23 provided you was in fact the poultry house density
24 information that Dr. Olsen used for his spatial
25 analysis?

08:48AM

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1 MR. GEORGE: Object to form.

2 A Yes, I did.

3 Q And what did you do to evaluate that?

4 A I compared the map that was based on those GIS
5 shape files to Figure 2.51 of his map. 08:48AM

6 Q Okay. Figure 2.51 in his map was a map that
7 he used to, early on in the case, to identify
8 preliminarily some groundwater sampling location, is
9 it not?

10 MR. GEORGE: Object to form. 08:48AM

11 A I believe it was in the context of
12 groundwater, yes.

13 Q Okay. Do you know whether that particular map
14 was used for his poultry house density evaluation in
15 his PCA analysis? 08:49AM

16 A I do not know that. He did not indicate which
17 poultry house density data layer he used in that
18 part of his evaluation and he did not present a
19 poultry house density map within his PCA evaluation.

20 Q Well, if this was important to you, why didn't 08:49AM
21 you ask doctor -- doctor -- Mr. George to ask a
22 question concerning the poultry house density
23 information Dr. Olsen used in his deposition?

24 MR. GEORGE: Object to form. I did ask
25 that question. Answer, if you can. 08:49AM

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1 VIDEOGRAPHER: Off the Record. The time is
2 9:12.

3 (Following a short recess at 9:12 a.m.,
4 proceedings continued on the Record at 9:19 a.m.)

5 VIDEOGRAPHER: We're back on the Record. 09:18AM
6 The time is 9:19.

7 Q Dr. Johnson, during the break, I put before
8 you what's been marked as Exhibit 13, and let me
9 represent to you the basis for this document. This
10 document is a portion of an aerial photograph that 09:19AM
11 was prepared by the State in this case and produced
12 to the defendants approximately a year ago. It was
13 also the aerial photograph that was ground truthed
14 by investigators for the State of Oklahoma. All of
15 this is outlined in Dr. Fisher's report. This 09:19AM
16 aerial photograph then took the locations, two of
17 the locations you discussed in your report and we've
18 been talking about, Lincoln wastewater treatment
19 plant, and then you used the GIS program to draw the
20 watershed or the drainage area, the subwatershed to 09:20AM
21 the drainage area that would go to that location.
22 Also on this map there are areas of red circles
23 where the State's investigation ground truthed
24 active poultry house locations.

25 A Okay. 09:20AM

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1 **Q** Active or inactive poultry house locations.

2 MR. GEORGE: Yeah. David, can you be clear
3 there? Are you representing these are active?

4 MR. PAGE: Active or inactive.

5 MR. GEORGE: Active or inactive, okay. 09:20AM

6 MR. PAGE: Uh-huh.

7 **Q** And finally there's a brown square area where
8 the State has reviewed the records of the Oklahoma
9 Department of Agriculture and Forestry, and that's
10 where it's documented land application has occurred. 09:20AM

11 MR. GEORGE: David, can I ask a couple of
12 questions to see if we can get some clarity around
13 this document? You represented that this photograph
14 has been produced previously by the State in the
15 case. 09:21AM

16 MR. PAGE: Yes.

17 MR. GEORGE: And when you say -- when you
18 make that representation, you're referring to the
19 underlying image; is that correct?

20 MR. PAGE: The photograph, yeah. Not the 09:21AM
21 lines that have been overlaid on the photograph.

22 MR. GEORGE: To your knowledge, is today
23 the first time when the State has produced an aerial
24 photograph, such as what we've put in front of the
25 witness as Exhibit 13, that includes the sample 09:21AM

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1 locations that are shown, the outline of areas of
2 identified land application and the circling in red
3 of active or inactive poultry houses?

4 MR. PAGE: All this information that
5 underlies this exhibit has been produced by the 09:21AM
6 State of Oklahoma --

7 MR. GEORGE: My question is whether or not
8 --

9 MR. PAGES: -- in different forms.

10 MR. GEORGE: Well, I understand that, but 09:21AM
11 prior to today, David, has there been a production
12 of a map that reflects all of the information shown
13 in Exhibit 13 in the form in which you have
14 presented it to this witness?

15 MR. PAGE: I don't know whether it has or 09:22AM
16 not.

17 MR. GEORGE: Okay. I'm going to challenge
18 this as obvious expert analysis that's been done
19 after the expert disclosure deadline and not a part
20 of any production of considered materials or -- 09:22AM

21 MR. PAGE: No.

22 MR. GEORGE: -- production of documents in
23 this case.

24 MR. PAGE: These materials were part of
25 considered materials for Dr. Olsen -- excuse me, Dr. 09:22AM

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1 Fisher and Dr. Engel and also part of Dr. Olsen's
2 considered materials.

3 MR. GEORGE: Can you point -- can you
4 provide me to a reference in either Dr. Olsen or --

5 MR. PAGE: Not at this time. 09:22AM

6 MR. GEORGE: Hang on, hang on. Let me
7 finish. I'm wanting the Record to be clear that if
8 I search Dr. Olsen or Dr. Fisher's expert materials,
9 which I have, I will not find -- I will not find
10 Exhibit 13? 09:22AM

11 MR. PAGE: I'll show you an example. Mark
12 this.

13 MR. GRAVES: It's not a complex issue. Has
14 this piece of paper been produced in the case?

15 **A** Is that for me to look at? 09:23AM

16 **Q** Yeah.

17 MR. GEORGE: David, are you going to answer
18 James' question?

19 MR. PAGE: No, I'm not going to answer his
20 question. 09:23AM

21 MR. GEORGE: Okay. We'll take that as a
22 representation that it hasn't been produced.

23 MR. PAGE: Well, I'm going to show you that
24 it has been produced.

25 MR. GRAVES: If I go through Dr. Olsen's 09:23AM

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1 considered materials, am I going to find a Bates
2 numbered Olsen document that looks like this?

3 MR. PAGE: You're going to find the --

4 MR. GRAVES: That's not what I asked. Am I
5 going to find one that looks like this? 09:23AM

6 MR. PAGE: I don't know, James, off the top
7 of my head.

8 MR. GRAVES: Okay. That's what I wanted to
9 know.

10 MR. PAGE: But I do know this: All of this 09:23AM
11 information --

12 MR. GRAVES: I didn't ask about this.

13 MR. PAGE: -- was produced --

14 COURT REPORTER: You guys, one at a time.

15 MR. PAGE: -- in maps in different pieces 09:23AM
16 of expert reports.

17 Q For example, I'm going to show you Exhibit 14.
18 This was part of Dr. Fisher's report. Did you ever
19 review this information concerning poultry house
20 land application? 09:23AM

21 MR. GRAVES: Before he answers the
22 question, I'm going to finish the objection and
23 finish making the Record.

24 MR. PAGE: Well, then make your objections,
25 but you're not here to ask me questions about what's 09:24AM

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1 in the Record.

2 MR. GRAVES: I needed to know the answer to
3 the question to know whether it was objectionable.

4 I appreciate you being candid that you don't know
5 whether or not this piece of paper has been produced 09:24AM

6 as part of any of the considered materials in this
7 case. This particular piece of paper, as Mr. George
8 started down the path while ago, is clearly

9 analysis. It may be based on information that's
10 been produced previously, but this document has not 09:24AM

11 been produced previously, and it's based on analysis
12 that's been done after the expert deadline.

13 MR. PAGE: Let me just make for the Record
14 clear --

15 MR. GRAVES: So I object and move to strike 09:24AM
16 it.

17 MS. COLLINS: Join.

18 MR. PAGE: -- that this particular document
19 was put together as a rebuttal for the work that was
20 performed by Dr. Johnson that we got on December 09:24AM

21 1st. It's taking his map that we've already
22 reviewed and taking the information that was
23 available to him on his map and overlaying it,
24 showing what information was available. It's

25 clearly a rebuttal exhibit. 09:24AM

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1 MR. GRAVES: And the court has -- has
2 barred rebuttal expert information in this case and
3 supplemental expert analysis in this case.

4 MR. PAGE: I think you're mistaken what the
5 court has ruled in this case.

09:25AM

6 MR. GRAVES: I'm not mistaken. I wrote the
7 motion and read the order. So I'm going to move to
8 strike it, and now you can ask your questions.

9 Q Did you ever review Exhibit 14?

10 A I don't recall seeing this exhibit.

09:25AM

11 Q It was -- do you recall seeing it in Dr.
12 Fisher's report?

13 A No, I don't.

14 Q Do you see that Exhibit 14 identifies areas of
15 land application?

09:25AM

16 MR. GEORGE: Object to form.

17 A Yes. The legend indicates that red or beige
18 squares are reported poultry waste application
19 areas.

20 Q And can you tell whether some of those squares
21 are also represented on Exhibit 13?

09:25AM

22 A This looks like a blow-up of a portion of the
23 whole basin near Lincoln. And the gold shaded box
24 appear to be consistent with the gold shaded box on
25 Exhibit 14.

09:26AM

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1 Q Do you know whether or not the records that
2 document poultry land application document all the
3 land application or just a portion of the land
4 application that's occurred in that area?

[illegible]

7 Q The records -- well, this map, Exhibit 14, is
8 based on Oklahoma Department of Agriculture and
9 Forestry records.

10	A	Okay.	09:26AM
----	----------	-------	---------

11 Q And my question to you is, do you know whether
12 or not these records include all the land
13 applications that have occurred within the watershed
14 or just some of them?

15 **A** I don't know what those represent beyond what 09:27AM
16 is written on the legend of that map.

17 Q Okay, and the areas of -- just to make the
18 Record clear, the areas that are in the Arkansas
19 portion are based on nutrient management plan and
20 application records produced by the defendants in 09:27AM
21 this case.

22 MR. GEORGE: Object to form.

23 | **A** Is that a representation or a question?

24 Q That's a representation just so you know. I
25 before said all of this was on Department of 09:27AM

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1 Agriculture and Forestry, but the Arkansas portion
2 is based on other records.

3 **A** May I take a look again?

4 **Q** Sure.

5 **A** So you're telling me that the gold boxes on 09:27AM
6 Exhibit 14 on the Oklahoma side, that data came from
7 a different source from that on the Arkansas side?

8 **Q** That's correct.

9 **A** Which explains why we have what we call a
10 county line fault running -- 09:27AM

11 **Q** Yes, sir.

12 **A** All right. I think I understand.

13 **Q** Thank you. Now, let's turn back to Exhibit
14 13. Do you see where there's a subwatershed now
15 shown for the Lincoln wastewater treatment plant 09:28AM
16 sampling point?

17 **A** Yes.

18 **Q** And could you identify that for the Record;
19 could you just describe that for us, please, for the
20 Record? 09:28AM

21 **A** The Lincoln wastewater treatment plant sample
22 point is on Bush Creek south of Lincoln and south of
23 Lincoln wastewater treatment plant.

24 **Q** And is it outlined on this map by a green and
25 white dotted area that begins at the Lincoln 09:28AM

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1 wastewater treatment plant red dot sampling
2 location?

3 **A** I'm sorry. Is it -- it begins here. Your
4 question was it outlined?

5 **Q** Yes. 09:28AM

6 **A** Yes. It's outlined by green and white.

7 **Q** And within that location you just identified,
8 do you see any poultry houses identified within that
9 area?

10 **A** Again, the red circles indicate poultry houses 09:28AM
11 either active or inactive?

12 **Q** Yes.

13 **A** Yes.

14 **Q** And do you also see numerous poultry houses
15 immediately around the area at this watershed? 09:28AM

16 **A** Yes, in different subbasins.

17 **Q** Would this information indicate to you that
18 this is an area of low poultry house density that
19 you're seeing on Exhibit 13?

20 **A** It would indicate that it is not zero. The 09:29AM
21 number of poultry houses per acre, where it would
22 fall in that quintile color range chart, I couldn't
23 tell based on just visual inspection.

24 **Q** Do you see that the watershed that was set out
25 in I think it's Figure 3-5 of your report is 09:29AM

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1 different than that what is evaluated here using the
2 GIS model to identify drainage areas to sampling
3 point?

4 **A** What page are you on there?

5 **Q** It's Page 39. 09:30AM

6 **A** Thank you.

7 MR. GEORGE: David, while he's turning, did
8 you mark this Exhibit 14?

9 MR. PAGE: Yes.

10 MR. GEORGE: Okay, and with respect to 09:30AM

11 Exhibit 14, I do recall seeing the outline of the
12 watershed with the 40-acre blocks that are -- if I
13 recall that correctly, maybe they're larger than
14 that -- shaded in orange. I don't recall seeing a
15 map that had the sample locations plotted over the
16 top of that. Has this exact map been produced
17 previously or was it prepared for this deposition?

18 MR. PAGE: The sampling points were added
19 for this deposition.

20 MR. GEORGE: Okay. So the map in the exact 09:30AM
21 form of Exhibit 14 had not been produced prior to
22 today; is that correct?

23 MR. PAGE: In the exact -- the underlying
24 information has all been produced. The exact
25 creation of this map has not. It was prepared for 09:30AM

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1 rebuttal.

2 MR. GEORGE: Okay. Move to strike.

3 MS. COLLINS: Join.

4 MR. GEORGE: I'm sorry, we may have lost

5 the question in that. Did you recall it, Dr. 09:31AM

6 Johnson?

7 A I thought the question was, is there a
8 difference in how the subbasins are indicated on
9 this air photo as compared to the -- to the waste --

10 to the poultry house base layer that I used for my 09:31AM

11 maps and, yes, there is a difference.

12 Q Now, did you have some of your own data that
13 you could have done a similar analysis concerning
14 poultry house density other than what I've shown you
15 in Exhibit 13? 09:31AM

16 MR. GEORGE: Object to form.

17 A Did I have data beyond what is --

18 Q Well, there's been a lot of objections about
19 this data as being first presented here today or at
20 least the map as represented. Isn't it true, sir, 09:31AM
21 that you your own -- had to your own -- your own
22 information provided by DPRA that showed poultry
23 house density in this area?

24 A I don't recall if there were --

25 MS. COLLINS: Can we get another copy of 09:32AM

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1 the exhibit right before this?

2 MR. GEORGE: 14?

3 MS. COLLINS: 14. It's the one with the
4 reported poultry waste application. I gave mine to
5 him.

09:32AM

6 MR. GEORGE: Which means she won't get it
7 back. I stole it.

8 MS. COLLINS: Correct.

9 Q Dr. Johnson, I've handed you what's been
10 marked as Exhibit 15. Can you identify that
11 document for the Record, please, sir?

09:33AM

12 A This looks like one of the air photo base map
13 provided by DPRA that we've been discussing.

14 Q Okay, and does this information come from your
15 considered materials?

09:33AM

16 A It has a Bates stamp of Glenn Johnson, so,
17 yes, it did.

18 Q Did you review this --

19 A Yes.

20 Q -- when you were evaluating Dr. Olsen's
21 poultry house density when you created criticism
22 that's set forth in Figure 3-5?

09:33AM

23 A Yes, I did.

24 MR. GEORGE: David, has the document been
25 manipulated from his considered materials in any

09:33AM

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1 way?

2 MR. PAGE: It's reproduced; it's printed
3 except --

4 MR. GEORGE: The red circles?

5 MR PAGE: Except the red circle has been
6 added.

7 MR. GEORGE: Okay. Just so we make a clear
8 Record, the document that's been put in front of the
9 witness has been altered by the State's experts,
10 including red circles on is it; is that correct? 09:34AM

11 MR. PAGE: Yes. We took the information
12 that's found in Exhibit 13 on poultry house
13 identification, which is the ground truthing of the
14 poultry house aerial photo, and then transferred
15 that identification to Exhibit 15. 09:34AM

16 MR. GEORGE: Okay. Move to strike.

17 Q Do you note, Dr. Johnson, that there is quite
18 a few poultry houses shown on the aerial photo that
19 you had in your possession at the time you were
20 doing the analysis of Dr. Olsen's PCA? 09:34AM

21 A Yes.

22 Q Why did you ignore all these poultry houses in
23 this area when you claimed that Dr. Olsen's poultry
24 house density analysis did not comport with his PCA
25 analysis? 09:35AM

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1 MR. GEORGE: Object to form.

2 A Because my understanding was that as part of
3 Dr. Fisher's analysis, he determined which ones were
4 active and which ones were inactive, and I believe
5 if this is part of the same photo base that you 09:35AM
6 represented that some of these are active and some
7 of these are inactive.

8 Q Uh-huh.

9 A The base layer was ultimately shaded green.
10 So I did not go back and review all the details of 09:35AM
11 Fisher's analysis, but based on that, given how the
12 analysis is representative of being done, I figured
13 that he determined that these were inactive or they
14 would not have -- the subbasin would not have been
15 colored green. 09:35AM

16 Q Is it your position, sir, that inactive
17 poultry houses do not contribute to the constituents
18 that are seen as potential contaminants in the IRW?

19 MR. GEORGE: Object to form.

20 A It's my understanding that was the reason for 09:35AM
21 making the distinction between active and inactive
22 poultry houses, so, yes.

23 Q What's the basis for that assumption?
24 Wouldn't a formerly used poultry house also
25 contribute to contamination based on generation of 09:36AM

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1 waste that would be land applied near the poultry
2 house?

3 MR. GEORGE: Object to form.

4 **A** I don't know the extent to which poultry waste
5 from an inactive house might be spread in the same 09:36AM
6 manner that -- or even if it still exists, if
7 there's still poultry waste in such a house. I
8 don't know.

9 **Q** And you don't know whether or not previous
10 land application of poultry to a particular field 09:36AM
11 does not increase contaminants in that field?

12 MR. GEORGE: Object to form.

13 **A** Could you repeat the question, please?

14 (Whereupon, the court reporter read
15 back the previous question.) 09:37AM

16 **A** With the hypothetical that it was applied at
17 some point in the past doesn't inform me on the
18 extent to which it is impacting stream water
19 collected at present.

20 **Q** Did you do any investigation in that regard? 09:37AM

21 **A** My reading of Dr. Olsen's report was that --
22 was that the poultry house density as represented on
23 these maps were a surrogate for poultry house land
24 application, and if they were making a distinction
25 between active and inactive, I'm not sure why they 09:37AM

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1 would make that distinction if the presumption was
2 that you were -- that -- that poultry litter was
3 still being applied from both active and inactive
4 houses.

5 Q Well, the distinction -- the point is, Dr. 09:38AM
6 Johnson, cannot past application of waste to a land
7 field create an accumulation of those wastes that
8 could continue to run off of that field over a
9 period of time long after the source of the
10 generation of the waste is gone? 09:38AM

11 MR. GEORGE: Object to form.

12 A All things are possible.

13 Q You've never seen that situation in your own
14 investigation where previous releases continue to
15 release into the stream? 09:38AM

16 A I have seen it.

17 Q You have seen it?

18 A Yes.

19 Q So that wouldn't surprise you to find that?

20 A It doesn't surprise me but, I mean, if this 09:38AM
21 was a major concern, why collect the Lincoln
22 wastewater treatment plant sample in a stream at
23 this location? I mean, I don't think I'm going out
24 on a limb that when the plaintiff's expert collects
25 a sample in a stream with the name Lincoln 09:38AM

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1 wastewater treatment plant, that the design was to
2 have a sample that represented output from a
3 wastewater treatment plant and --

4 Q Did you see anything in Dr. Olsen's --

5 MR. GEORGE: Hang on, David, let him 09:39AM
6 finish. Were you done?

7 MR. PAGE: We're running out of --

8 MR. GEORGE: Were you done?

9 Q Did you see anything in Dr. Olsen's report
10 that would indicate that he couldn't get any closer 09:39AM
11 access to Lincoln wastewater treatment plant than
12 the point at which he took the sample?

13 A I don't recall seeing that, but if that was
14 the issue, then -- if that was the issue, then by --
15 by taking the sample and naming it Lincoln 09:39AM
16 wastewater treatment plant, he had -- must have had
17 some reason to believe that that's what it was
18 representing.

19 Q Based on the poultry houses you see on Exhibit
20 15, is it conceivable that these poultry house 09:39AM
21 operations would impact the -- the waters that are
22 sampled at the Lincoln wastewater treatment plant --

23 MR. GEORGE: Object to form.

24 Q -- location?

25 A Again, all things are possible, but we have a 09:40AM

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1 report, although you had it, to determine what the
2 latest and greatest map was; correct?

3 MR. GEORGE: Object to form.

4 A Well, I just said that I did not review
5 Fisher's report, but, again, I did presume that the 09:58AM
6 single poultry house density map that did appear in
7 Olsen's report would have been related to that work.

8 Q Did you realize that in Section 2 of Dr.
9 Olsen's report there was a whole list of poultry
10 house density maps that were created during the 09:58AM
11 course of this litigation?

12 A I don't recall that section.

13 Q Before you is Exhibit 16, Dr. Johnson.

14 A Okay.

15 Q And I'll make the same representations I did 09:58AM
16 with respect to Exhibit 13.

17 MR. GEORGE: Can I have a copy, please?

18 MR. PAGE: I thought I put it in front of
19 you during the break. Melissa might have grabbed
20 it. 09:58AM

21 MR. GEORGE: Oh, okay. Thank you. David,
22 I assume that the story behind the production of
23 Exhibit 16 is the same that we've discussed with the
24 prior Exhibits 13, 14 and 15; is that right?

25 MR. PAGE: I don't understand what you mean 09:59AM

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1 by the story. I'm saying that I'm making the same
2 representations as to the information that's on the
3 map.

4 MR. GEORGE: Okay. Move to strike,
5 untimely expert analysis.

09:59AM

6 A I'm sorry, did you ask a question?

7 Q No. I was waiting until you had a chance to
8 look at it. Can you identify where the -- let me --
9 let's turn first to your report, Page 51. What is

10 your criticism with regard to Page 51 in your
11 report, in particular Figure 3-12?

09:59AM

12 A Well, similar to HFS 22, this particular
13 sample had a PC1 score greater than 1.3. It's
14 reported on the figure as 1.5. According to Dr.
15 Olsen's PCA classification, that would be poultry
16 impacted. A PC1 of 1.5 is the average score of
17 multiple samples.

10:00AM

18 Q Okay. Would you now look to Exhibit 16?

19 A Yes.

20 Q Isn't it possible that the poultry houses and
21 the poultry land application that's shown on Exhibit
22 16 would account for Dr. Olsen's PC score as
23 reported on Page 51 of your report?

10:00AM

24 MS. COLLINS: Object to form.

25 A Certainly it's possible. It's also possible

10:00AM

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1 some differences with respect to what I plotted, not
2 in this basin if I recall -- this subbasin if I
3 recall correctly. So your question was, what other
4 poultry house density data? So at least two of the
5 iterations of the poultry house density layer showed
6 this. In addition, I believe you asked what other
7 poultry house density data. I believe the contract
8 growers, which was in my production material, there
9 was also poultry house density data that I produced
10 there.

10:04AM

10:04AM

11 Q Did you find poultry houses within the
12 watershed defined by HFS 05 in Exhibit 16 based on
13 the poultry house growers' data?

14 A I don't recall.

15 Q Would that have been important to you one way
16 or the other if you had it?

10:05AM

17 A Ultimately there were differences in the map.
18 Rather than even start to engage in an argument over
19 whose poultry house density data were -- was correct
20 and which one wasn't, it seemed to make for a
21 simpler story to adopt the one that I thought both
22 sides agreed on was accurate. Doesn't appear to
23 have worked out very well.

10:05AM

24 Q Let me mark another exhibit for you. Let me
25 hand you what is marked as Johnson Exhibit 17. Can

10:05AM

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1 you identify that for the Record, sir?

2 **A** Yes. This is the -- this is a map generated
3 by DPRA, analogous to the figure we were just
4 looking at in my report, except the base layer is an
5 air photo. 10:06AM

6 **Q** Okay. So you had -- well, does Exhibit 16 and
7 17 show the same watershed?

8 **A** I believe it does.

9 **Q** Okay, and so you had Exhibit 17 available to
10 you at the time you wrote your report and your 10:06AM
11 conclusions for Figure 3-12; correct?

12 **A** That's correct.

13 **MR. GEORGE:** David, before we go further
14 with this exhibit, once again can I get confirmation
15 that Exhibit 17 has been altered from as it appeared 10:06AM
16 in Dr. Johnson's considered materials by the
17 insertion of red circles on the document by someone
18 working for the State of Oklahoma?

19 **MR. PAGE:** The red circles have been added
20 to Johnson's considered document as shown in the 10:07AM
21 Bates number based on the information that was
22 presented in Dr. Fisher's report.

23 **MR. GEORGE:** Where is the Bates number, by
24 the way? Maybe that's --

25 **MS. COLLINS:** Right here. 10:07AM

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1 MR. GEORGE: Thank you.

2 Q Did you ignore these poultry houses --

3 A No.

4 MR. GEORGE: I'm sorry. Move to strike

5 Exhibit 17. Go ahead. 10:07AM

6 Q Did you ignore these poultry houses when you
7 concluded Dr. Olsen's spatial analysis was -- did
8 not support his PC1 scores?

9 A I did not ignore them. I saw them. I
10 discounted them as indicative of poultry impact, and 10:07AM

11 this map provides a perfect example. We have
12 poultry houses within the subbasin just to the south
13 of HFS 05, and looking at this map, the fact that it
14 ended up with a green color, indicating zero poultry
15 house density, led me to believe that Fisher or one 10:07AM
16 of his people or somebody else on the plaintiff's
17 side determined that these were inactive or
18 abandoned or whatever criteria he used and that
19 these ones were somehow were active.

20 Q But you didn't check Dr. Fisher's report to 10:08AM
21 test your assumption, did you?

22 A Again, no.

23 Q Okay. Why didn't you -- did you mention
24 anything in your report that the aerial photos does
25 indicate some poultry houses that could be observed 10:08AM

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1 Q Did you have aerial photo available for you
2 when you did this analysis?

3 **A** Again, I believe DPRA generated a similar air
4 photo base map.

5 Q And do you recall whether you observed 10:13AM
6 numerous poultry houses on the air photo that you
7 were provided by DPRA?

8 **A** I believe I observed at least one. I don't
9 know if it was numerous or not.

10 MR. ELROD: Do you have an extra one of 10:14AM
11 these?

12 MS. COLLINS: We're on 16 still; right?

13 MR. ELROD: Siloam.

14 MR. PAGE: I'm going to 17 now.

15	MR. ELROD: Yeah.	10:14AM
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16 MR. GEORGE: He's on Figure 3-14.

17 MR PAGE: I haven't marked it yet.

18 MR. ELROD: We're on what page of the
19 report?

20 MR. GEORGE: Page 53. David, before we get 10:14AM
21 to Exhibit 18, the explanation for the creation of
22 this document is the same as Exhibits 13, 14, 15, 16
23 and 17 that we've been discussing; is that right?

24 Q I'm going to represent to you, Dr. Johnson,
25 that the information that created Exhibit No. 5 is 10:15AM

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1 the same information that was used to create Exhibit
2 8 -- excuse me, 13. I think we're missing some but
3 certainly it's the same as 13.

4 **A** Okay.

5 MR. GEORGE: David, just so the Record is 10:15AM
6 clear, Exhibit 18 was not included in Dr. Olsen's
7 considered materials and was produced in preparation
8 for this deposition; is that right?

9 MR. PAGE: The information underlying
10 this -- 10:15AM

11 MR. GEORGE: That's not my question, David.

12 MR. PAGE: Well --

13 MR. GEORGE: I know -- I know you want to
14 avoid the question, but that's not the question.

15 MR. PAGE: I'm not trying to avoid the 10:15AM
16 question. I think you are interrupting my
17 deposition.

18 MR. GEORGE: I'm making a Record.

19 MR. PAGE: I made it perfectly clear what
20 the source of this information is. 10:15AM

21 **Q** So, Doctor --

22 MR. GEORGE: Hang on. Unless you tell me
23 otherwise, I'm going to assume that Exhibit 18 was
24 created in preparation for this deposition and does
25 not appear in this form in any expert production or 10:16AM

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1 in any production by the State of Oklahoma prior to
2 today, and on that basis, unless you want to
3 challenge that, I move to strike it.

4 MR. PAGE: Okay. What I've told you
5 earlier is that I told you what I know how this 10:16AM
6 information was prepared. I cannot represent to you
7 today whether a document similar to this was one of
8 the other fifteen expert reports produced by the
9 defendants.

10 MR. GEORGE: Okay.

11 MR. PAGE: We prepared this document for
12 rebuttal on Dr. Johnson's report --

13 MR. GEORGE: Okay.

14 MR. PAGE: -- using information, the base
15 layer information that was all provided in other -- 10:16AM
16 I know in other expert reports in this case.

17 MR. GEORGE: It's rebuttal analysis that
18 the court has already determined to be improper in
19 this case, and that's why I renew my motion to
20 strike. 10:16AM

21 MR. PAGE: I can see why you wouldn't want
22 to have this information before the court.

23 MR. GEORGE: Move to strike the
24 characterization of this document unless you want to
25 give a deposition and testify about it. 10:17AM

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1 MR. GRAVES: And we can see that the State
2 continues to disregard the court's orders if we want
3 to make sound bytes here, Mr. Page.

4 MR. PAGE: I think, Mr. James, the court
5 said that --

6 MR. GRAVES: I am not Mr James.

7 MR. PAGE: I'm sorry, Mr. Graves, that the
8 court made it very clear that rebuttal evidence
9 would be allowed in this case if it was rebuttal
10 evidence. That's my recall. 10:17AM

11 MR. GRAVES: We can agree to disagree about
12 what the court ordered in that regard.

13 MR. PAGE: Okay.

14 Q In any event, you still get the opportunity to
15 answer questions today. 10:17AM

16 A Wonderful.

17 Q So, Dr. Johnson, given those same
18 representations, can you identify the HFS 04
19 watershed on Exhibit 18 that you also were looking
20 into in your Figure 3-14? 10:17AM

21 A Yeah. This is an air photo of base map of
22 showing locations HFS 04 and RS 336 in and around
23 Siloam Springs.

24 Q And is the sample location identified on the
25 base map? 10:18AM

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1 did you not, before you wrote your report?

2 **A** Yes.

3 **Q** Let me show you what's been marked as Exhibit

4 19. Is that the photo you had before you wrote your

5 conclusions for Figure 3-14?

10:25AM

6 **MR. GEORGE:** Let me make a Record on the

7 exhibit first. Exhibit 19 is, once again, a

8 document that has been altered through the work of

9 an expert for the State of Oklahoma from the

10 production in Dr. Fisher's considered materials.

10:25AM

11 It's untimely expert analysis -- I'm sorry, Dr.

12 Johnson's considered materials. It's untimely

13 analysis; therefore, we move to strike it. Now go

14 ahead with the answer.

15 **A** I lost the question.

10:26AM

16 **Q** Fortunately she records it.

17 (Whereupon, the court reporter read

18 back the previous question.)

19 **A** 3-14, yes.

20 **Q** And does it depict the HFS 04 watershed

10:26AM

21 similar to what we've observed on Exhibit 18?

22 **A** Yes, it's a very similar shape.

23 **Q** Okay, and do you observe poultry houses within

24 the aerial photo that you had in your possession as

25 Exhibit 19?

10:26AM

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1 MR. ELROD: Go ahead.

2 A He indicated that in deposition. Your
3 question was in his report and his deposition.

4 Q Yeah.

5 A He indicated it in deposition. 10:40AM

6 Q Okay. So I imagine we found a few things out
7 that you said in your deposition that were not also
8 in your report; correct?

9 MR. GEORGE: Object.

10 A Yes. 10:40AM

11 Q Okay. So if you were faced with this type of
12 an anomaly in your environmental investigation, even
13 though you had already issued your expert report and
14 perhaps given your deposition, would you continue
15 your evaluation and try to explain the anomaly? 10:40AM

16 A Yes, I would.

17 Q Dr. Johnson, I have placed before you Exhibit
18 No. 21. It's an aerial photo which has an outline
19 of the watersheds or the land area that drains to
20 RBS 578. Do you see that, sir? 10:41AM

21 A Yes.

22 Q And these are -- it has all five of the
23 sampling locations that are within the city area of
24 Tahlequah; correct?

25 A Correct. 10:41AM

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1 Q This watershed also has some information
2 concerning poultry land application, does it not?

3 **A** Again, we have the gold or brown areas
4 indicating that.

5 Q Okay. If the investigation in this case 10:42AM
6 determined that there was documented land
7 application in the areas of gold or brown squares,
8 could that account for the higher PC1 scores at the
9 sampling locations identified on Exhibit 21?

10 MR. GEORGE: Object to form. 10:42AM

11	A	No.
----	----------	-----

12	Q	It would not?
----	---	---------------

13	A	No.
----	----------	-----

14	Q	Why not?
----	---	----------

15 **A** Because PC1 is related to iron and aluminum 10:42AM
16 and particulate matter, not to any particular
17 source. It --

18 MR. GEORGE: I'm sorry, go ahead.

19 **A** The fact that you -- that we have three areas
20 at the upstream edge of this basin where there's 10:42AM
21 purportedly poultry litter -- poultry litter
22 applied, that may indicate one of several possible
23 sources, but we still have these -- I don't see any
24 evidence that allows me to discount other sources
25 from this urban area. 10:43AM

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1 **Q** But poultry then could be a potential source
2 contributing to those locations if these are in fact
3 documented land application areas; do you agree with
4 that?

5 MR. GEORGE: Object to form. 10:43AM

6 **A** They're upstream. Constituents from that area
7 could get to those stream areas, as could any other
8 source of phosphorus or bacteria up this stream.

9 MR. GEORGE: Let me make a Record first
10 with respect to Exhibit 21, Mr. Page, that I assume 10:43AM
11 this is, again, not a document that was included in
12 Dr. Olsen or any other expert's production of
13 considered materials and that it was prepared after
14 the submission of the expert report in connection
15 with your preparation for this deposition, and in 10:43AM
16 light of that, I move to strike it as untimely
17 expert analysis, and one point of clarification on
18 this map, if I could secure one, the outlined gold
19 areas, could you provide the source of that
20 information? 10:44AM

21 MR. PAGE: They're documented land
22 application locations.

23 MR. GEORGE: Documented by whom?

24 MR. PAGE: I don't recall.

25 MR. GEORGE: Documented in ODAFF records? 10:44AM

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1 MR. PAGE: I believe there's ODAFF records,
2 an investigator -- my recollection is, Mr. George,
3 is that the documentation is based on ODAFF records
4 and individual observations from investigators.

5 MR. GEORGE: Have the records associated 10:44AM
6 with the investigation of these land application
7 areas that are shown in Exhibit 21 been produced in
8 this case prior to today?

9 MR. PAGE: Yes, sir, that is my
10 understanding. 10:44AM

11 MR. GEORGE: Could you please direct me to
12 them?

13 MR. PAGE: Not right now I couldn't. If
14 you ask Mr. Bullock, I'm sure he could identify
15 those for you. 10:44AM

16 MR. GEORGE: Move to strike Exhibit 21.

17 **Q** Dr. Johnson, are there many streams within the
18 IRW?

19 **A** There are a number of springs in the -- in the
20 SW17 dataset. I don't recall the exact number, but 10:45AM
21 I assume there are probably other springs that were
22 not sampled.

23 **Q** Do you recall whether or not any of those
24 springs have been identified by Dr. Olsen as being
25 associated with poultry waste due to their 10:45AM

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1 **A** There are surprises like that, yes.

2 **Q** Well, let's -- I see a two-minute warning, and
3 I don't think I'm going to get through in two
4 minutes, so why don't we take a break before we
5 begin on this exhibit.

10:52AM

6 **A** Okay.

7 VIDEOGRAPHER: We're off the Record. The
8 time is 10:52.

9 (Following a short recess at 10:52
10 a.m., proceedings continued on the Record at 11:05
11 a.m.)

12 VIDEOGRAPHER: We are back on the Record.
13 The time is 11:05.

14 MR. GEORGE: Mr. Page, you've put in front
15 of the witness Exhibit 22, and I have an objection
16 to it and move to strike it. It is, again, the
17 product of expert analysis that has been completed
18 after Dr. Olsen's report and after his deposition
19 and is untimely. It's not been included in the
20 production of his considered materials, and near as

11:05AM

21 I can tell, was not something considered by him in
22 forming the opinions expressed in his expert report.
23 I'll also note that Exhibit 22 contains some what I
24 think you will represent to be documented areas of
25 land application and that those areas are

11:06AM

11:06AM

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1 inconsistent with the only information that have
2 been provided to the defendants before, which is in
3 Exhibit 14, which show no land application in this
4 area.

5 So to the extent there's been an additional 11:06AM
6 investigation by investigators working for the State
7 of Oklahoma of land use practices around the Fite
8 property, that material has not been produced, and
9 to question this witness about it is improper. So
10 move to strike Exhibit 22. 11:06AM

11 MR. PAGE: I'll just make one comment, only
12 one, is that all the information concerning land
13 application has been provided to defendants prior to
14 this deposition.

15 MR. GEORGE: Okay. Could you point me to 11:07AM
16 the information that would show land application,
17 particularly in this little --

18 MR. PAGE: I don't have --

19 MR. GEORGE: Hang on. Let me finish,
20 please. Particularly in the orange shaded area 11:07AM
21 along the Illinois River reflected on Exhibit 22?

22 MR. PAGE: I do not have that information
23 with me. I know that that particular location that
24 you identified on Exhibit 22 was identified by Ed
25 Fite as an area of poultry land application. 11:07AM

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1 MR. GEORGE: Identified when by Ed Fite?

2 MR. PAGE: When he was interviewed for the
3 sampling.

4 Q Dr. Johnson, we placed before you Exhibit 22,
5 which is based on the aerial photo taken by the 11:07AM
6 State of Oklahoma in this case and on there taking
7 the watershed that would encompass the cattle
8 samples that we've been discussing today. Do you
9 see that, sir?

10 A Yes. 11:08AM

11 Q Also on this exhibit, which relates to the
12 Fite property I believe, does it not, that's shown
13 on Exhibit 3-9 of your report?

14 A I'm sorry. The question was, is this the same
15 location? 11:08AM

16 Q Yes.

17 A Yes, it is.

18 Q Okay. Also on Exhibit 22 you see there's been
19 added, in addition to the cattle sampling locations,
20 also a groundwater well sampling location and a 11:08AM
21 spring sampling location?

22 A Correct.

23 Q I'll represent to you that the spring that's
24 shown on here was a spring that Dr. Olsen was --
25 mentioned during his deposition as being a potential 11:08AM

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1 **Q** Okay, and at any point in time in those
2 conversations, Dr. Johnson, did either Drs. Connolly
3 or Sullivan suggest that your analysis was
4 inconsistent with the work that they were doing on
5 source identification? 03:24PM

6 **A** No, they did not.

7 **Q** Okay. Let me hand or hopefully you have in
8 front of you Exhibits 9 and 11 to your deposition.

9 **A** Okay.

10 **Q** Do you recall being asked questions based upon 03:24PM
11 a sentence or two, excerpts from Exhibit 9 titled
12 Evaluation of Graphical and Multivariate Statistical
13 Methods For Classification For Water Chemistry Data?

14 **A** Yes, I do.

15 **Q** And, Dr. Johnson, did you have an opportunity 03:25PM
16 to review the entire text of that article last
17 night?

18 **A** I still have not read it in the detail I would
19 if I was reviewing this as a paper, but I read it
20 and I spent more time on it than I was -- than I had 03:25PM
21 here yesterday.

22 **Q** And my understanding of the questioning
23 yesterday -- I want to know if it's consistent with
24 yours -- was that there was a suggestion that that
25 article supported Dr. Olsen's treatment and 03:25PM

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1 transformation of data in his principal component
2 analysis; is that right?

3 A Yes, that's my recollection as well.

4 Q Now that you've read the entire article, do
5 you believe that to be true? 03:25PM

6 A No, I do not.

7 Q Could you explain?

8 A Yes. Okay. On Page 461, and I don't recall
9 if this was the specific excerpt I was asked to
10 read, but it is addressing the same issue. It's 03:26PM

11 talking about data screening. At the bottom of the
12 first paragraph is a few sentences under data
13 screening. Based on these analyses, decisions were
14 made concerning the need for and selection of
15 appropriate transformations to achieve a better 03:27PM

16 approximation of the normal distribution. This is
17 important because most of the statistical -- most
18 statistical analyses assumed the data are normally
19 distributed. I agree that many, if not most,
20 statistical analyses carry with it assumptions of 03:27PM

21 distribution of the dataset. I do not think that
22 PCA falls into that category. PCA is not strictly a
23 statistical analysis. It is a linear
24 transformation.

25 Q Are there other portions of the article that 03:27PM

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1 you believe are supportive of that position?

2 **A** Yes. There's a section a little farther back

3 on Page 466. The very last paragraph of that page

4 starts, another type of data analysis sometimes used

5 is principal components analysis. This technique

03:27PM

6 reduces the number of dimensions present in data,

7 and in parenthesis, reducing eleven variables to two

8 variables in our study. The PCA-defined new

9 variables can then be explained in a scatter

10 diagram, and I believe they're talking about a

03:28PM

11 scores plot. Let me see. Skip down to the last

12 sentence that's starting there. This technique,

13 strictly speaking, is not a multivariate statistical

14 technique but a mathematical manipulation that may

15 provide certain amounts -- a certain amount of

03:28PM

16 insight into the structure of the data matrix. So

17 that is perfectly consistent with what I just said

18 with regard to the earlier excerpt.

19 **Q** Okay, and how are these concepts relevant to

20 the issue that you were discussing with Mr. Page on

03:28PM

21 transformations performed by Dr. Olsen?

22 **A** Well, the issue goes back to -- to the degree

23 to which it was necessary to do a log transform of

24 the data. A log transform to me is necessary in

25 those instances where the statistical method you are

03:29PM

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1 using carries with it the assumption of normally
2 distributed data. PCA does not.

3 Q Okay. Dr. Johnson, were there other portions
4 of this article that Mr. Page did not have you read
5 that you think bear upon the issues that have been 03:29PM
6 discussed in this deposition?

7 A Yes. This particular excerpt was not with
8 regard to data transformations, but it's on Page
9 459, and it's talking about data gap filling
10 procedures and estimation of missing values, and it 03:29PM
11 says, usually the effective use of many of the
12 methods requires complete water analyses, no missing
13 data values. Missing data values may make the use
14 of graphical water chemistry techniques impossible
15 or limit the quality of the statistical analysis. 03:29PM

16 During the statistical analysis, most statistical
17 software packages replace those missing values with
18 the means of the variables or prompt the user for
19 casewise deletion of analytical data, both of which
20 are not desirable. This can bias statistical 03:30PM
21 analyses if these values represent a significant
22 number of data being analyzed, and then they go on
23 with some of the recommendations that they say work
24 better with their data.

25 Q Dr. Johnson, is that passage that you just 03:30PM

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1 read consistent with your criticisms of some of the
2 missing data that Dr. Olsen did not accurately
3 address in his principal component analysis?

4 **A** Yes, and I believe, if I understand, Dr.
5 Cowan's criticism as well.

03:30PM

6 **Q** Okay. All right. There's one other article,
7 Dr. Johnson, that you were asked to read excerpts
8 from that I believe you've now had an opportunity to
9 read the entirety of, and that's Exhibit 11 entitled
10 Chemometric Application in Classification and
11 Assessment of Monitoring Locations of an Urban River
12 System. Do you have that in front of you?

03:30PM

13 **A** Yes, I do.

14 **Q** Okay, and once again, Dr. Johnson, were there
15 portions of this article that Mr. Page did not ask
16 you to read that bear upon the issues that were
17 being discussed?

03:31PM

18 **A** Yes.

19 **Q** Okay. Could you please point those out?

20 **A** And, again, when Mr. Page was asking questions
21 relative to this paper yesterday, I believe he was
22 focusing on Page 392 where there's some form of a
23 log transform on the right side of 392 and then
24 there's the identification of a Z-transform farther
25 down. To go back one page to Page 391, the very

03:31PM

03:31PM

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1 first paragraph says, the application of different
2 chemometric methods, and then it lists a number,
3 including PCA, aids in reducing the complexity of
4 large datasets and offers better interpretation and
5 understanding of water quality. Environmental data 03:31PM
6 are not in general normally distributed. However,
7 most of the multivariate methods are based on normal
8 distribution of the data, and then he has three
9 examples, correlation analysis, factor analysis and
10 discriminate analysis, and PCA is not listed within 03:32PM
11 that excerpt.

12 You then move to Page 394. There's a specific
13 discussion of principal components analysis and it
14 says -- 394, Section 2.3.2, principal component
15 analysis is a technique widely used for reducing the 03:32PM
16 dimensions of multivariate problems. As a
17 non-parametric method of classification, it makes no
18 assumptions about the underlying statistical
19 distribution.

20 Q And, Dr. Johnson, how is that relevant to the 03:32PM
21 transformations issues that we've been discussing?

22 A It supports what I said in my report, that the
23 log transform is not necessary because it's --
24 principal components does not depend on the
25 assumption of normally distributed data. 03:33PM

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